

EDM

Day 2

- Display symbol substitution
- Related Display
- Shell Command
- Menu Mux (multiplexor)
- Embedded Window
- Symbol
- Dynamic Symbol
- X/Y Graph

Display symbol substitution

- Edm -m “sym1=one,sym2=two,...” ...
- When edm encounters $$(sym1)$ the string *one is substituted*
- $$(sym2)$ becomes *two*
- ...*and so on*
- *Related displays may also pass additional symbols to child displays*

Special Internal Symbols

- Some widgets translate special predefined symbols specified as *<symbol>*
 - *<DSPNAME>* translates to the Xwindow display name
 - *<DSPID>* translates to the Xwindow display name with “.” changed to “-”
 - *<WINID>* translates to the window ID
 - *<TITLE>* translates to the display title
 - *<HELPPDIR>* translates to the location of the help file directory
 - *<env:environment variable>* translates to the value of the given environment variable

Related Display

- Presented as a button that calls up a new display window or a menu of display window names
- Left-button-click ==> Calls up new display or displays menu of choices
- On focus: Mouse over calls up display
Mouse off closes display
- Button 3 popup: B3-Press calls up display
B3-Release closes display

Related Display (cont)

- Properties
 - Menu Label (symbols allowed)
 - File (symbols allowed)
 - Macros (may contain references to existing symbols and to special internal symbols)
 - Append/Replace (macro symbols)
 - Propagate (macro symbols)
 - Display Position
 - Original
 - Button

Related Display (cont)

- Properties (cont)
 - Close Current (display)
 - Dups Allowed
 - Button Label (symbols allowed)
 - On Focus
 - Invisible
 - No Edit
 - Button 3 Popup
- *Additional Displays* button permits up to 19 additional display files to be specified; clicking button calls up a menu
- Up to four EPICS PVs may be set

Related Display (cont)

- Main dialog box contains global info and properties of first display
- *Additional Displays dialog box contains properties of additional displays*
- *Menu Label, File, Macros, Mode, Propagate, Position, Close Current, and Dups Allowed can be specified for each display*

Shell Command

- Presented as a button that executes an external script or program or displays menu of command names
- Left-button-click ==> Executes command or displays menu of choices
- Properties
 - Shell Command (symbols and special internal symbols allowed)
 - Menu Label (symbols allowed)
 - Button Label (symbols allowed)

Shell Command (cont)

- Properties (cont)
 - Required Host
 - Password
 - Confirm (password)
 - Lock
 - Invisible
 - Close Current Display
 - Allow Multiple Instances
 - Initial Exec Delay (sec)

▶ 4. Exec Delay (sec)

Menu Mux (Multiplexor)

- Presented as a button that calls up a menu of states
- Provides a second set of symbols that may be assigned values at display execution time
- When symbol value changes, other widgets are deactivated and reactivated using the new symbol values
- Initial symbol state may be taken from a PV or set manually; if a PV is utilized, its value changes as the multiplexor value is modified
- Four symbols may be modified with up to 16 different values

Embedded Window

- Container widget used to embed an external display in parent display
- Width & Height should be set appropriately; embedded display is not resized
- If string PV is given, value is used to specify child display file
- Otherwise, *Display File Name* contains name of child display file; symbols are allowed
- *May be used with multiplexor to open child displays from menu at execution time*

Symbol

- May be used to associate image composed of primitive graphical objects with values of PVs
- Objects allowed
 - Lines
 - Rectangle
 - Circle
 - Arc
 - Static Text
 - GIF and PNG Images

Symbol (cont)

- Uses another edl file as an image template
- Image template file contains up to 64 images which are mapped to PV values
- Properties
 - Symbol File
 - Color PV
 - PV Names
 - AND, XOR, and Shift masks
 - Binary Truth Table

Symbol (cont)

- Properties (cont)
 - Preserve Original Size
 - Preserve Original Colors
- *Color PV and Preserve Original Colors used to create symbol with one image state where PV value is mapped to color*
- *A single PV Name implies the mapping of image states to a range of real values*

Symbol (cont)

- *Multiple PV Names + Binary Truth Table implies the mapping of image states to a value formed by the arithmetic OR of a left-shifted binary value.*
 - *First PV is either non-zero or zero which corresponds to true or false; $FinalValue = FinalValue \mid FirstValue$ left-shifted zero places*
 - *Second PV is either non-zero or zero which corresponds to true or false; $FinalValue = FinalValue \mid SecondValue$ left-shifted one place*
 - *Third PV is either non-zero or zero which corresponds to true or false; $FinalValue = FinalValue \mid ThirdValue$ left-shifted two places*
 - *... and so on*

Symbol (cont)

- *Multiple PV Names + NOT Binary Truth Table implies the mapping of image states to a value formed by the arithmetic OR of an integer value operated on by the AND mask, XOR mask, and Shift count.*
 - *First PV value is converted to an integer; $FinalValue = FinalValue \mid ((FirstIntegerValue \& andmask) \wedge xormask)$ shifted left shiftcount places)*
 - *Second PV value is converted to an integer; $FinalValue = FinalValue \mid ((SecondIntegerValue \& andmask) \wedge xormask)$ shifted left shiftcount places)*
 - *... and so on*
- *Shift count may be negative which results in a right shift*
- *Exercise 1*

Dynamic Symbol

- Used to build palette of symbols or to add animation to a display
- Uses Symbol image template file
- Properties
 - DynSymbol File
 - Color PV
 - Use Gate
 - Gate On Mouse-over
 - Gate Up PV

Dynamic Symbol (cont)

- Properties (cont)
 - Gate Up Value
 - Gate Down PV
 - Gate Down Value
 - Continuous
 - Rate (s)
 - Initial
 - Show OOB State

Dynamic Symbol (cont)

- Properties (cont)
 - Preserve Original Size
 - Preserve Original Colors
- Exercise 2

X/Y Graph

- 2D Plot
- Scalar or Array Pvs
- X/Y or chronological plots
- Properties
 - Title
 - X Label
 - Y Label
 - Y2 Label

X/Y Graph (cont)

- Properties (cont)
 - Foreground (color)
 - Background (color)
 - Grid (color)
 - Plot Mode
 - Count
 - Update Delay (ms)
 - Border
 - X/Y Trace Data

X/Y Graph (cont)

- Properties (cont)
 - Axis Data
 - Trigger PV
 - Reset PV
 - Reset Mode
- X/Y trace properties
 - X, S
 - Y, S
 - Mode: plot, scope

X/Y Graph (cont)

- X/Y trace properties (cont)
 - Y2
 - Graph mode: line, point, needle
 - Update: X and Y, X or Y, X, Y, Trigger
 - Thk
 - Line mode: solid, dash
 - Symbol: none, circle, square, diamond
 - Color

X/Y Graph (cont)

- Axis data properties
 - X (Format and Precision not used)
 - Show
 - Style: linear, log10, time, log10(time)
 - Range: from pv, user specified, auto-scale
 - Minimum
 - Maximum
 - Time Format: Seconds, mm-dd-yy hh:mm:ss
 - Label Tick Intervals, Label grid
 - Majors/Label, Major grid
 - Minors/Major, Minor grid

X/Y Graph (cont)

- Axis data properties (cont)
 - Y1
 - Same as X with the following exceptions
 - Style: linear, log
 - No Time Format
 - Y2
 - Same as Y1